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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
WANG, TED-M	

ART UNIT	PAPER NUMBER
2634	

DATE MAILED: 11/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/923,242	HUSTH, ARNE	
	Examiner	Art Unit	
	Ted M Wang	2634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 August 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 August 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *8/3/01, 2/8/02*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawing should label all the elements in the figures. For example, in Fig.3 20 should be labeled as LNA; and 31 and 32 should be labeled LPF;... etc.

Specification

2. The disclosure is objected to because of the following informalities:

- Delete line 3 of the Abstract.

Appropriate correction is required.

Claim Objections

3. Claim 6 is objected to because of the following informalities:

- On claim 6 line 2, "the" should be changed to "a".

Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-3, 8-10, and 12 are rejected under 35 U.S.C. 102(e) as being anticipated by Jakobsson et al. (US 6,654,596).

- With regard claim 1, Jakobsson et al. discloses a homodyne radio receiver having DC compensation comprising:

  determining the modulation extremes of a received modulated signal (Fig.1A elements 8 and 8', Fig.1B elements 18 and 18', column 4 lines 1-7, and column 6 lines 36-41); determining a DC offset for the signal from the modulation extremes (Fig.1A element 7, Fig.1B element 17, column 4 lines 9-67, column 6 line 42-67); and processing the signal to compensate for the offset (column 5 lines 1-67 and column 7 lines 1-58).
- With regard claim 2, Jakobsson et al. further discloses determining the DC offset as substantially the mean (column 4 lines 38-45) of the signal amplitude at the modulation extremes (Fig.1A elements 8 and 8', Fig.1B elements 18 and 18', column 4 lines 1-7, and column 6 lines 36-41).
- With regard claim 3, Jakobsson et al. further discloses the step of processing the signal comprises subtracting the offset from the signal (column 4 line 48 – column 5 line 26 and column 6 line 63 – column 7 line 44).
- With regard claim 8, Jakobsson et al. further discloses that the signal comprises an in-phase component of a modulated signal (Fig.1 elements 4).
- With regard claim 9, Jakobsson et al. further discloses that the signal comprises a quadrature component Q of a modulated signal (Fig.1 elements 4).

- With regard claim 10, Jakobsson et al. further discloses that the signal is GMSK modulated (column 4 lines 38-45).
- In regard claim 12, which is a receiver claim related to claim 1, all limitation is contained in claim 1. The explanation of all the limitation is already addressed in the above paragraph.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jakobsson et al. (US 6,654,596) in view of Dent (US 5,241,702).

- With regard claim 4, Jakobsson et al. discloses all of the subject matter as described above except for specifically teaching the step of processing the signal comprises subtracting a weighted exponential function from the signal. However, Dent teaches that the step of processing the signal comprises subtracting a weighted exponential function from the signal (Fig.1 element 17, Fig.4(b), Fig.4(d) element15, and column 7 line 43 – column 8 line 63). Note that the DC cancellation circuit (DCN) discloses by Dent with a differentiation circuit and a digital integration circuit (A/D converter with delta modulation technique,

Fig. 4(b)) having a high pass filtering characteristics, which lead to the DC component being a declining exponential function.

It is desirable to have the DC cancellation circuit (DCN) discloses by Dent with a differentiation circuit and a digital integration circuit (A/D converter with delta modulation technique) so that the DC offset can be reasonably estimated and eliminated in later process (column 2 line 21-39). Therefore, It would have been obvious to one of ordinary skill in the art at the time of the invention was made to include the apparatus/method as taught by Dent in which, implementing the step of processing the signal comprises subtracting a weighted exponential function from the signal, into Jakobsson's DC cancellation process so as to improve the receiver performance with losing or distorting the DC and low frequency components of the desired signal (column 2 lines 15-18).

- With regard claim 5, all limitation is contained in claim 4. The explanation of all the limitation is already addressed in the above paragraph.

8. Claims 6, 7, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jakobsson et al. (US 6,654,596) and Dent (US 5,241,702) as applied to claim 5 above, and further in view of Nag et al. (US 6,606,359).

- With regard claim 6, Jakobsson et al. and Dent disclose all of the subject matter as described above except for specifically teaching further comprising applying an inverse filter characteristic to the signal.

  However, Nag et al. teaches an area-optimum rapid acquisition cellular multi-protocol digital DC offset correction scheme comprising applying an inverse filter

characteristic to the signal (Fig.3 elements 68 and 92, Fig.5 and column 5 line 60 – column 6 line 53) so that a preferable infinite impulse response circuit can be used to correct the DC offset (column 5 lines 60-63). The infinite impulse response circuit requires a smaller area of silicon when manufactured on an integrated circuit because a lower filter order can be used to achieve the same functionality as compared to other similar low pass filter circuits (column 6 lines 1-5). Therefore, It would have been obvious to one of ordinary skill in the art at the time of the invention was made to include the method as taught by Nag et al. in which, applying an inverse filter characteristic to the signal, into Jakobsson et al. and Dents' DC cancellation circuit and process so as to improve the efficient and speed of the DC correction loop for a receiver such as direct conversion receiver (column 2 lines 35-44).

- With regard claim 7, Jakobsson et al. and Dent discloses all of the subject matter as described above except for specifically teaching the limitation of determining the modulation extreme from the inverse filter signal.

  However, Nag et al. further teaches the limitation of determining the modulation extreme from the inverse filter signal in Fig.3 element 68, 92, and 96, and column 4 lines 10-53.

  It is desirable to determine the modulation extreme from the inverse filter signal so that the digital DC offset correction circuit acquires the DC offset very rapidly and yields an order of magnitude better performance than prior art circuits (column 3 lines 62-67). Therefore, It would have been obvious to one of ordinary

skill in the art at the time of the invention was made to include the method as taught by Nag et al. in which, determining the modulation extreme from the inverse filter signal, into Jakobsson et al. and Dents' DC cancellation circuit and process so as to improve the performance and speed of the DC offset correction.

- In regard claim 13, which is a receiver claim related to claim 7, all limitation is contained in claim 7. The explanation of all the limitation is already addressed in the above paragraph.

9. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over "Jakobsson et al. (US 6,654,596)" in view of Langberg et al. (US 5,852,630).

- With regard claim 11, Jakobsson et al. discloses all of the subject matter as described above except for the method written by a computer program embodied in a computer-readable medium or processor.

  However, Langberg et al. teaches that the method and apparatus for a transceiver warm start activation procedure with precoding can be implemented in software stored in a computer-readable medium. The computer-readable medium is an electronic, magnetic, optical, or other physical device or means that can be contain or store a computer program for use by or in connection with a computer-related system or method (column 3, lines 51-65). One skilled in the art would have clearly recognized that the method of "Jakobsson et al." would have been implemented in a software. The implemented software would perform same function of the hardware for less expense, adaptability, and flexibility. Therefore, it would have been obvious to have used the software in "Jakobsson

et al." as taught by Langberg et al. in order to reduce cost and improve the adaptability and flexibility of the communication system.

10. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jakobsson et al. (US 6,654,596) and Langberg et al. (US 5,852,630) as applied to claim 11 above, and further in view of Lindoff et al. (US 6,370,205).

- With regard claim 14, Jakobsson et al. and Langberg et al. disclose all of the subject matter as described above except for detailing the receiver comprising a mixer circuit for providing quadrature related signals from a received modulated signal, a dc cancellation circuit for canceling the dc component in the quadrature related signals and a digital signal processor for removing a residual dc component from the signals.

  However, Lindoff et al. teaches a receiver comprising a mixer circuit (Fig.1 elements 130 and 160) for providing quadrature related signals from a received modulated signal (Fig.1 elements 130, 160, and 175), a dc cancellation circuit for canceling the dc component in the quadrature related signals (Fig.2 and column 3 lines 38-43) and a digital signal processor for removing a residual dc component from the signals (Fig.1 element 190) so as to increase accuracy of DC-offset compensation with in radio receivers (Abstract lines 1-8).

  One skilled in the art would have clearly recognized that the receiver of "Lindoff et al. " would have been applied to a direct conversion receiver to improve the performance. Therefore, It would have been obvious to one of ordinary skill in the art at the time of the invention was made to include the receiver as taught by

Lindoff et al. which, comprising a mixer circuit for providing quadrature related signals from a received modulated signal, a dc cancellation circuit for canceling the dc component in the quadrature related signals and a digital signal processor for removing a residual dc component from the signals, into Jakobsson's receiver circuit so as to improve the accuracy of DC-offset compensation with in radio receivers (Abstract lines 1-8).

Conclusion

11. Reference US 5,838,735 and US 6,516,183 are cited because they are put pertinent to the direct conversion receiver with DC compensation. However, none of references teach detailed connection as recited in claim.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ted M Wang whose telephone number is (571) 272-3053. The examiner can normally be reached on 8:30 a.m. - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on (571) 272-3056. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-0377.

Ted M Wang
Examiner
Art Unit 2634

Ted M. Wang

SHUWANG LIU
PRIMARY EXAMINER

SHUWANG LIU
PRIMARY EXAMINER